CTU Online Anytime Module 1.4 – Suitable and Unsuitable Substrates

Key Takeaways

- Direct Bonding Tile Installation
  - Substrates suitable for direct bonding tile installation
    - Cement backerboards
    - Cement masonry units
    - Mortar beds
    - Cementitious self-leveling underlayments
  - Note that all suitable substrates still must meet ANSI standards.
- Interfaceable Substrates
  - Substrates suitable if properly prepared with specific materials and methods
    - Exposure 1 Plywood (Exterior Grade)
    - Cement and epoxy terrazzo
    - Gypsum wall board and underlayments
    - Oriented Strand Board (OSB)
    - Existing well-bonded ceramic tile
    - Existing well-bonded sheet vinyl flooring
    - Steel decking
- Bonding directly to plywood can be achieved under the following requirements
  - Must be rated Exposure 1 (exterior grade)
  - Only direct bond on floors
  - Subject to requirements and provisions per ANSI A108.01 Part 3.4
  - Sheets need to be gapped 1/8" with 1/4" at abutments
  - Floor framing and joist spacing must meet applicable building code provisions for floors and floor loading
  - Care must be taken as plywood expands and contracts more than concrete
  - Reference TCNA Handbook for additional details
    - Environmental exposure classification Res1 or Com1 can be specified
    - Interior, dry, residential and light commercial use only
- Terrazzo, cement / epoxy require specific materials and methods
  - Surface coatings must be removed and surface bonding primer or liquid crack isolation membrane must be installed

    - If metal divider strips are present (many and not conducive to tile design movement joint pattern), a sheet crack isolation membrane can be used in conjunction with a new architect- or engineer-designed joint pattern.
- Gypsum wallboard can be used according to ANSI A108.01.3.5
    - Board must be properly installed, flat and plumb with any loose particles removed.
    - Any oil based coatings must be encapsulated with bonding primer or liquid applied crack isolation membrane
- Gypsum-based underlayments
    - Suitable if installed by licensed applicator per the manufacturers installation instructions with sealer-primer
    - Sealer coat must be properly applied. If not present, a primer will need to be applied.
    - Due to excessive absorptive properties, a water droplet test should be done before and after primer applied to determine suitability
- OSB is not suitable for direct bonding due to probability of bond failure when under load
- Interface materials are also known as surface preparation materials. They include:
    - Cement patches
    - Cement backerboard
    - Cementitious self-leveling underlayments
    - Liquid-applied and sheet membranes
- Cement backerboards, such as Wonderboard® Lite, are one of the most popular inter-faceable materials
    - These boards are good for interior and exterior use, are resistant to water and suitable for wet area applications. Wonderboard® Lite exceeds performance requirements of ANSI A118.9.
- Tiling over existing tile or vinyl flooring is possible, using the appropriate interfacing techniques.
    - TCNA TR418, TR420, TR711, TR712 and TR713 address tiling over existing tile or vinyl floors
    - Additionally, a ready to use, water based primer such as CUSTOM® MBP Multi-Surface Bonding Primer can be used as an interface material vs. mechanical preparation method
- Examples of unsuitable substrates that should never be covered include:
    - Fiberglass or other plastics, Hardwood or parquet wood floors, Luan plywood, chemically contaminated substrates, particle board, Masonite, dimensionally unstable metals, self-adhesive vinyl tile, sponge backed vinyl, carpet, wall coverings and oil based paint.